



US Army Corps
of Engineers
HUNTSVILLE ENGINEERING
SUPPORT CENTER

Defense Environmental Restoration Program
for
Formerly Used Defense Sites

Ordnance and Explosives
Chemical Warfare Materials

**ARCHIVES SEARCH REPORT
FINDINGS**

**WATERTOWN AIR-TO-GROUND
GUNNERY RANGE**

Marshall County, South Dakota

Project No. B08SD087201

AUGUST 1996

Prepared by
US ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

ORDNANCE AND EXPLOSIVES
CHEMICAL WARFARE MATERIALS
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1.0 Introduction

1.1 Authority

In 1986, Congress established the Defense Environmental Restoration Program at 10 U.S.C. 2701 et.seq. This program directed the Secretary of Defense to "carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary."

In March, 1990, the EPA issued a revised National Contingency Plan. Under 40 C.F.R. 300.120, EPA designated DOD to be the removal response authority for incidents involving DoD military weapons and munitions under the jurisdiction, custody and control of DoD.

Since the beginning of this program, the U.S. Army Corps of Engineers has been the agency responsible for environmental restoration at Formerly-Used Defense Sites (FUDS). Since 1990, the U.S. Army Engineering and Support Center, Huntsville, has been the Mandatory Center of Expertise and Design Center for Ordnance and Explosives.

1.2 Subject

The former Watertown Air-to-Ground Gunnery Range was also known as Sisseton Range, Ft. Sisseton Precision Bombing Range and Watertown Gunnery Range. The site is located in Marshall County, approximately ten miles southeast of the town of Britton, South Dakota.

1.3 Purpose

This Archives Search Report (ASR) compiles information obtained through historical research at various archives and records holding facilities, interviews with persons associated with the site or its operations, and personal visits to the site. All efforts were directed towards determining possible use or disposal of ordnance on the site. Particular emphasis was placed on establishing the types, quantities and area(s) of disposal. Information obtained during this process was used in developing recommendations for further actions at the site.

1.4 Scope

The entire site of the former range, consisting of 7,312 acres, was evaluated in assessing the potential for OE contamination. It is designated as DERP-FUDS Project No. B08SD087201.

This report presents the history of the site, description and characterization of the immediate surrounding area, real estate ownership information, findings of a visual field survey, and OE site analysis, including an evaluation of potential ordnance contamination. A separate **Executive Summary** supplements these ASR FINDINGS and furnishes the CONCLUSIONS and RECOMMENDATIONS.

2.0 Previous Investigations

2.1 Corps of Engineers Documents

Under the Defense Environmental Restoration Program, the Omaha District prepared a Project Inventory Report (INPR), dated April 1994, which contained a Findings and Determination of Eligibility (FDE), for the subject Watertown Air-to-Ground Gunnery Range. The FDE states that the site was acquired in 1944 and was used in support of the Watertown Army Air Field. The site was determined to be eligible for the Defense Environmental Restoration Program for Formerly Used Defense Sites as established under 10 USC 2701 et seq. A RAC score of 4 was assigned. A copy of the INPR is included at Appendix D.

A Certificate of Clearance (COC), issued on 10 August 1950 states that the site had been cleared of all explosive materials reasonably possible to detect. A Copy of the COC is located at Appendix E.

2.2 Other Reports

No other site investigation reports were obtained during the archive search.

3.0 Site Description

3.1 Land Usage

3.1.1 Location

The Watertown Air-to-Ground Gunnery Range, consisting of 7,312 acres, is located in Marshall County, 10 miles southeast of Britton, South Dakota. It is further identified as being located in Range 56 West, Sections 21, 22, 27, 28, 33, 34 of Township 126 North, and Sections 3, 4, 9, 10, 15, 16 of Township 125 North.

3.1.2 Past Use

Prior to DoD acquiring usage of the land, it was in private ownership and used mainly for rangeland.

3.1.3 Current Uses

The majority of the site is in private ownership and used for ranching and agricultural purposes. Approximately 480 acres are owned by the State of South Dakota and maintained as a state park.

3.2 Climatic Data

The site is located in a continental climate, with frequent daily temperature fluctuations and distinct seasons. Winters generally is cold and dry with storms of short duration. Normal temperatures for the season are in the middle teens and precipitation is mainly in the form of snow. Seasonal snowfall has varied from under 9 inches to over 75 inches. Blizzard type storms due occur on occasion but are infrequent. Average yearly snowfall is a little under 36 inches.

Spring is characterized by marked increases in both temperature and precipitation. Nearly one-third of the annual rainfall occurs during the spring months

Summers are hot but not extreme. Temperatures of 100 degrees or over usually occur three or four times a year, but nights are normally cool and comfortable. Summertime precipitation is mainly in the form of showers and thunderstorms. Hail occurs about 3 times a year on the average with the thunderstorms.

Autumn is a very pleasant season with mild warm days, cool nights, and plentiful sunshine.

The prevailing winds are south southeasterly every month except February. The winds are persistently strong most of the year, but highest in March, April and May and lowest in July and August.

At noon, the mean relative humidity is 70 percent in January, 54 percent in April, 53 percent in July, and 54 percent in October.

In Aberdeen, the sun shines for about 52 percent of the daylight hours in winter, and for more than 70 percent in summer. Skies are clear about 28 percent of the time, partly cloudy about 28 percent and cloudy about 44 percent.

Climatological data for the area are summarized in TABLE 3-1. Data were collected at the National Weather Service meteorological station at the Aberdeen Regional Airport. The site is located approximately 35 miles northeast of the Regional Airport.

**CLIMATOLOGICAL DATA FOR
ABERDEEN, SOUTH DAKOTA
TABLE 3-1**

Month	Temperature		Precipitation	Wind	
	Average Minimum (°F)	Average Maximum (°F)		Average Speed Miles/Hour	* Average Direction
January	-0.6	20.9	0.37	11.3	SSE
February	6.5	26.9	0.47	11.3	NW
March	19.8	39.8	1.34	12.5	SSE
April	33.0	57.3	1.95	13.0	SSE
May	44.5	69.7	2.41	12.4	SSE
June	54.3	78.8	3.15	10.5	SSE
July	59.6	85.9	2.75	9.5	SSE
August	56.8	84.4	2.13	10.2	SSE
September	46.1	72.9	1.86	10.6	SSE
October	34.2	60.4	1.12	11.1	SSE
November	19.9	40.5	0.59	10.9	SSE
December	5.3	25.4	0.41	10.7	SSE
Average	31.6	55.2	18.55	11.2	SSE

* PREVAILING WIND DIRECTION BASED ON CLIMATOLOGICAL DATA
AT HURON, SOUTH DAKOTA, 91 MILES SOUTH OF ABERDEEN

3.3 Geology and Soils

3.3.1 Geology

Watertown Air-to-Ground Gunnery Range lies near the western boundary of the Western Lakes Section of the Central Lowland physiographic province. The western boundary is known as the Missouri Escarpment or the Coteau des Missouri. Lakes number in the thousands, and prominent end moraine, outwash plains and numerous kames and eskers are

dominant land features. Stream drainage is poorly developed but is more distinct in the rolling to steep areas on the outer edges where deeply entrenched waterways route water to lower-lying areas.

The Coteau des Missouri is a ridge of small hills with stagnant ice glacial features such as closely spaced knobs and marshy sloughs between them. The landscape is completely glacial in origin, formed as a result of a continuous sheet of stagnant, or dead ice developed characteristic glacial features such as dead ice moraines, collapsed-stream-sediment topography, collapsed-lake-sediment topography, ice-walled lake plains and associated disintegrated ridges and trenches.

The glacial deposits range in thickness from 1-800 feet. These glacial deposits are underlain by 800-900 feet of Cretaceous-age rocks, from upper to lower, the Pierre Shale, Niobrara Formation, a shaly marl or chalk, the Carlile Shale, the Greenhorn Formation, which is mostly composed limestone interbedded with limey shale, the Graneros Shale, a shale interbedded with silt and the Dakota Formation, which is a sandstone containing shale lenses. These Lower Cretaceous formations are directly underlain by PreCambrian basement granite which is usually weathered in the upper part.

3.3.2 Soils

Soils within the Watertown Air-to-Ground Gunnery Range vary from nearly level to steep, well-to-moderately well drained, silty, sandy, clays with organics, formed within glacial till or drift.

For soil considerations, the site can be roughly divided in half, with Mallard Lake being the dividing line.

The northern site soils formed on a glacial moraine locally known as the "Sisseton Hills". The more level areas' soils have a dark gray clay with organics underlain by a brown, silty clay with organics. These areas have a high capacity for water intake, and a high shrink-swell potential.

Areas of swales have a thick surface layer of dark gray clay with organics underlain by a transitional layer of calcareous, dark gray-brown and grayish-brown clay with organics. Below 8" is a calcareous light, brownish-gray and light gray clay. These soils also have a high water capacity, have moderately slow permeability and a moderate hazard of erosion due to runoff. Again, a high shrink-swell potential exists.

Soils on slopes have a thin surface layer of dark gray clay with organics that is underlain by a transitional layer of calcareous, dark grayish-brown and brownish-gray clays with organics. Hazard of erosion is moderate due to runoff. These soils have moderately slow permeability.

The soils on the southern half of the site formed within glacial drift. The soils on gently undulating to rolling areas have a surface of dark gray clay with organics; the upper subsoil is a dark gray and very dark grayish-brown clay with organics, the lower subsoil is a brown clay with organics. These are underlain by a clayey glacial till or clayey glacial drift.

The soils on more level areas have a surface of dark gray silty clay with organics; the upper subsoil is a dark gray and dark grayish-brown silty clay with organics, the lower subsoil is a pale brown, calcareous silty clay with organics. These are underlain by stratified silty and sandy clays with organics.

The available water capacity is high for these soils, permeability moderately slow and the shrink-swell potential is moderate. Soils on slopes are susceptible to erosion due to runoff.

Depth to freeze-line for northeastern South Dakota is 66".

3.4 Hydrology

3.4.1 Ground Water

Glacial sand and gravel deposits form the most important water bearing units and can produce yields of 500 gpm. The major glacial aquifer underlying the site is the James aquifer. The James aquifer ranges in depth from about 100-580 feet below land surface. Water in the aquifer is under artesian pressure. The piezometric water surface ranges from 2-111 feet below land surface.

The Cretaceous Dakota aquifer also underlies the site at depths of 900-1500 feet. Water in the aquifer is under artesian pressure as well and in low-lying areas many wells flow.

3.4.2 Surface Water

The Watertown ATG Gunnery Range site is drained by several natural lakes and depressions or prairie potholes. Runoff from the site generally flows to these lakes or potholes with no drainage outlet to a stream.

3.5 Ecology

The information on the endangered and threatened species for this site has been provided by the U.S. Fish and Wildlife Service (USFWS) and the South Dakota Department of Game, Fish and Parks (DGFP).

The following federally-listed species are expected to occur in Marshall County, South Dakota: American burying beetle (Nicrophorus americanus), endangered; piping plover (Charadrius melodus), threatened; peregrine falcon (Falco peregrinus), endangered; whooping crane (Grus americana), endangered; bald eagle (Haliaeetus leucocephalus),

threatened; interior least tern (Sterna antillarum), endangered; and western prairie fringed orchid (Platanthera praeclara), threatened.

The DGFP noted that the following species of state concern are known to occur in the vicinity of the Watertown ATG Gun Range: regal fritillary (Speyeria idalia), rare; and Powesheik skipper (Oarisma powesheik), rare.

No additional information on the occurrence of rare or endangered species or natural communities is known at this time. This does not mean that other state or federally-listed species may not be present within the areas of interest. An on site inspection by appropriate state and federal personnel may be necessary to verify the presence, absence, or location of listed species, or natural communities if remedial action is recommended as part of the final ASR.

3.6 Demographics

3.6.1 Center of Activity

The Watertown Air-to-Ground Gunnery Range is located near the City of Britton, Marshall County, South Dakota.

3.6.2 Population Density

CITY/COUNTY	CITY: Britton	COUNTY: Marshall
AREA (sq. mi.)	1.7	839
POPULATION	1,394	4,737
POP DENSITY	820 persons/sq.mi.	5.6 persons/sq.mi

3.6.3 Types of Businesses and Industry

The number of business establishments in Marshall County can be broken down by type as follows: manufacturing 7.2.0%; agriculture 1.4%; trade 36.2%; services and financial 40%; and other 15.2%. Prominent employers in the County are trade and financial businesses at about 31.7%, services at 25.2%, manufacturing at 38%, and 1.4% unclassified. Foregoing percentages are at mid-March 1992.

3.6.4 Types of Housing

Housing is composed of both single family and multi-family dwellings. The median value of 1,400 specified owner-occupied housing units in Marshall County is \$22,900.

3.6.5 New Development in the Area

Residential construction and additions to a "convenience mart" are the only new projects being undertaken in the area.

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3.6.6 Typical Cross Sections of the Population:

Approximately 99.4% of the population of Britton City is White; 0% Black; 0.5% American Indian, Eskimo or Aleut; 0.1% Asian or Pacific Islander; and 0% other races. The percent of the total population (of any race) that is of Hispanic origin is 0%. The part of the population under the age of 18 is 26.8%, and the part over the age of 65 is 21.8%.

4.0 Historical Ordnance Usage

4.1 Historical Site Summary

In June 1942, the United States Army Air Corps selected the Municipal Airport in Watertown, SD, as a sub-base or satellite airfield for Sioux City Army Air Base, Iowa. Sioux City Army Air Base, home of the 15th Air Wing, came under the jurisdiction of the Second Air Force. The Watertown Army Airfield operated in conjunction with the units belonging to the Heavy Bombardment Air Base at Sioux City.

Watertown Army Airfield used several aircraft ranges for target practice, including the Watertown Air-to-Ground (ATG) Gunnery Range (Second Air Force 1943). In November 1942, the War Department authorized the acquisition of land for the Watertown ATG Gunnery Range, which eventually encompassed 7,312 acres, 2 miles by 6 miles in size. The Army Air Corps initially proposed the land be used for an air-to-ground gunnery range. Later, the Army Air Corps recanted and stated the ATG Range was "inadequate" in size for air-to-ground gunnery. The Second Air Force converted the site to a Precision Bombing Range. Yet, the Second Air Force continued to name the site, Watertown ATG Gunnery Range.

In 1943, the Army Corps of Engineers erected three towers on the southern end of the Range, southwest of the old historic buildings at Ft. Sisseton, for triangulation scoring of bombing practice. Observers reported hits and misses on targets. Bombing operations considerably disturbed the areas around the targets. Due to its location near a historic landmark, the Second Air Force also referred to the Watertown ATG Range as the Ft. Sisseton Precision Bombing Range (The Sisseton Courier 1944) (Headquarters, Army Air Base, Sioux City 1944). According to the Sisseton Courier, the Army Air Corps used the Watertown ATG Gunnery Range or Ft. Sisseton Precision Bombing Range for "over a year."

In May 1944, the Army Air Corps discontinued use of the Watertown ATG Range. A detail of soldiers hauled away material and equipment (Headquarters, Second Air Force 1945). Government-owned structures included one remaining observation tower (30 feet high), storage and generator room, and an observation room.

The War Department placed the Watertown ATG Gunnery Range in the category of surplus, effective 14 August 1945. The Second Air Force assigned Sioux City Army Air Base the responsibility for control, use, and maintenance of the Watertown ATG Gunnery Range pending final disposition.

In December 1945, Headquarters, Army Air Base, Sioux City issued a certificate for several ranges, including Ft. Sisseton, which states "a thorough search has been made...all duds, unexploded projectiles and bombs have been marked and disposed of..." (Office of the Commanding Officer 1945). The Federal Government canceled all leases for the site by June 1946.

In August 1950, the Army Corps of Engineers issued another certificate of clearance for decontamination of the site (Office of the Corps of Engineers 1950). Landowners are currently using the site for ranching and agricultural purposes. The State of South Dakota has also preserved a portion of the range as the Ft. Sisseton State Park.

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4.2 Review of Historical Records

**National Archives
8th & Pennsylvania
Washington, D.C. 20408
(202) 501-5671**

Record Group 153 - Records of the Office of the Judge Advocate General (Army)

Entry: Reservation File, 1800-1950

Box 417; Subject: Watertown - Deeds, Leases, Descriptions of land (bases and ranges).

Record Group 160 - Records of the Headquarters Army Service Forces

Entry 27

Box 43 (information on the surplus of the Fort Sisseton Precision Bombing Range).

**National Archives at College Park
8601 Adelphi Road
College Park, MD 20740
(301) 713-6800**

Record Group 18 - Records of the Army Air Forces

Entry: 1, Air Adjutant General, Mail & Records Division, Unclassified Records Section

Box 288; Subject: Decimal Files 1945, 684 to 686, Vol. 2 (information on the disposal of real estate for the Fort Sisseton Precision Bombing Range).

Entry: Air Adjutant General, Mail & Records Division, Unclassified Records Section
Box 2248; Subject: Decimal Files June 1944 - 1946, 684, 1944 to 1945 (range inspection report for Watertown ATG Gunnery Range).

Entry: Air AG Central Decimal Files, 1942 - 1946

Box 869; Subject: Central Decimal Files, Oct 1942 - May 1944, 352.17

Box 1594; Subject: Central Decimal Files, Oct 1942 - May 1944, 600 Misc. (information on acquisition of land, organizational jurisdiction, and facilities for Watertown Army Air Field and its ranges).

Box 2300; Subject: Central Decimal Files, Jun 1945 (leased property inspection report for the Watertown ATG Gunnery Range, 1945).

**National Archives
Suitland Reference Branch
4205 Suitland Road
Suitland, MD 20409
(301) 457-7182**

The National Archives and Records Administration transferred all pertinent record groups to the National Archives in Washington, D.C. or the National Archives at College Park, MD.

**Washington National Records Center
4205 Suitland Road
Suitland, MD 20409
(301) 457-7010**

The research team reviewed accession listings for RG 341 and RG 342 and did not find any pertinent information. Office box files were also checked for information.

**National Personnel Records Center
Military Personnel Records
9700 Page Avenue
St. Louis, MO 63132-5100
(314) 538-4085**

**Record Group 342 - Records of U.S. Air Force Commands, Activities, and Organizations
Accession: 44-A-6003**

Box 29 of 53; Subject: Acquisition and real estate documents for Watertown (acquisition and request for clearance of sites, including Watertown ATG Gunnery Range for practice bombing, 1942).

Box 30 of 53; Subject: Acquisition of land and amendments for Watertown (information on acquisition of land for the Watertown ATG Gunnery Range).

Box 41 of 53; Subject: Correspondence on usage of sites (summary information on Second Air Force bases and ranges, 1943, includes Watertown; information on the excess, leasing for grazing purposes, and disposal of the Watertown ATG Gunnery Range, 1944 - 1946; information on renewal of leases for Watertown ATG Gunnery Range; information on the use and control of Watertown bombing and gunnery ranges).

Box 42 of 53; Subject: Correspondence on various 2nd Air Force sites (summary of base and range information for the Second Air Force, 1943).

Box 47 of 53; Subject: Watertown Ranges (report of excess leased land for the Fort Sisseton Range; surplus information on the Watertown ATG Gunnery Range).

Accession: 46-A-3158

Box 1 of 1; Subject: Building & Grounds, Purchase of Land Properties, Target Ranges (information on the Watertown ATG Gunnery Range, 1943).

**U.S. Air Force Historical Research Agency
600 Chennault Circle
Maxwell AFB, AL 36112-6424
(334) 953-2447**

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Record Group - Corps of Engineers, Base Units Material
Entry: IRIS 02050146 thru 02050188
Box: Waterloo - Watertown; Watertown Folders: 02050155 -02050188
(information on the proposal for ATG gunnery range for Watertown AAF).

**U.S. Army Center of Military History
1099 14th Street, N.W.
Washington, D.C. 20005-3402
(202) 761-5416**

The research team reviewed vertical and card files and did not find additional pertinent information.

**Historical Office
U.S. Army Chemical-Biological Defense Command
Building E5183
Aberdeen Proving Ground, MD 21010-5423
(410) 671-4430**

The research team reviewed the historical office files and did not find any additional pertinent information.

**National Archives-Rocky Mountain Region
Building 48, Denver Federal Center
Denver, CO 80225
(303) 236-0817**

Record Group 121 - Records of the Public Buildings Service
Entry: Construction Management Division, Denver,
Box 34; Subject: Progress Photos and Final Photos, 1915-70, (Folder on Sisseton).

Record Group RG 270 - Records of the War Assets Administration
Entry: Real Property Disposal Case Files, 1939-1962
Box 95; Subject: Sioux Falls Army Airfield - Tremonton POW Sub-Camp
(disposal information by War Assets Administration on the Watertown ATG
Gunnery Range).
Box 107; Subject: Vanadium Plant - Watertown Army Airfield (surplus
documents and real property disposal case files on Watertown ATG Gunnery
Range).

**Federal Records Center - Denver
Building 48, Denver Federal Center
P.O. Box 25307
Denver, CO 80225
(303) 236-0804**

The research team reviewed accession listings and Standard Forms 135 and did not find any pertinent information.

**National Archives-Central Plains Region
2312 East Bannister Road
Kansas City, MO 64131
(816) 926-6272**

Record Group 270 - Records of the War Assets Administration
Entry: Real Property Disposal Case Files, 1946-1950
Box 351; Subject: South Dakota, Watertown Air-Ground Gunnery Range
(certificate of clearance for Fort Sisseton).

**Federal Records Center-Kansas City
2312 East Bannister Road
Kansas City, MO 64131
(816) 926-7271**

The research team reviewed available accessions at this repository and did not find any pertinent information.

**Cultural Heritage Center
South Dakota State Historical Society
900 Governors Drive
Pierre, SD 57501-2217
(605) 57501-2217**

The research team conducted a data search and copied a brief history of Watertown AAF from a publication entitled *South Dakota in World War II* by the World War II History Commission, SD.

**South Dakota State Library
800 Governors Drive
Pierre, SD 57501
(605) 773-3131**

The research team conducted an extensive review of card catalog files, vertical files, aerial and ground photograph collections, map collection, and secondary resources and did not find any additional pertinent information.

**State Historic Preservation Office (SHPO)
900 Governors Drive
Pierre, SD 57501-2217
(605) 773-3458**

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The research team conducted a review of files and did not find any additional pertinent information. However, the SHPO did refer the research team to a number of other state organizations for research.

**South Dakota State University
Day County Extension Office
Box 540, Courthouse
Webster, SD 57274
(605) 345-4641**

The research team did not obtain hard copy documentation on any sites. However, several referrals were provided to obtain first-hand information on all sites connected with the Watertown Army Airfield.

**Center for Western Studies
Augustana College
P.O. Box 727
Sioux Falls, SD 57197
(605) 336-4007**

After coordination with the archivist at the Center for Western Studies, the Lead Historian sent by fax a letter with an enclosure describing all the team's sites. The Center did not have any information pertinent to the site.

**Watertown Regional Library
611 B Avenue, N.E.
Watertown, SD 57201-0250
(605) 882-6226**

The research team consulted with the Chief Librarian and conducted a research of their special collections on the military in South Dakota. Essentially, data on family members who served in past wars was found. The research team did not find any pertinent information on any site.

**The Codington County Historical Society, Inc.
27 First Avenue, S.E.
Watertown, SD 57201
(605) 886-7335**

The research team reviewed an aerials (1950s) of the Watertown Municipal Airport and received an number of referrals for interviews.

**State Museum, Fort Sisseton
RR 2, Box 94
Royal Lake State Park
Lake City, SD 57247
(605) 448-5701**

The research team obtained a collection of historical materials on land acquisition, use, and disposal information on the Watertown ATG Gunnery Range. The research team also obtained a list of referrals for interviews on the Watertown ATG and Precision Bombing Ranges. Norma Johnson, part-time Historian for the State Museum, provided historical materials, much of which had been obtained by her from the National Archives and other sources. She also provided us with a general sketch map of the Watertown ATG Range and a picture of a practice bomb said to have been retrieved at the site.

4.3 Summary of Interviews

Interviews were conducted by telephone and in person, both prior to and during the site inspection. The primary purpose of these interviews was to make initial contact with individuals knowledgeable of the site and to coordinate follow-up visits during the site inspection phase of this ASR's preparation. A list of persons interviewed is included at Appendix H. Any pertinent information derived from these discussions is covered within the context of this report.

4.3.1 Interview with Landowner

Art Borgan
Rural Route 1, Box 86
Dublin, SD 57270
(605) 738-2480

Mr. Art Borgan, a landowner, one mile North of Fort Sisseton, was born in 1927 and raised in the area. During World War II, he recalls B series bombers (4 engines) flying over the Watertown ATG Gunnery Range and dropping 500 pound practice bombs (poundage is hearsay) that burst with sand and black powder smoke on soft ground, which made depressions 4 to 5 feet deep. Mr. Borgan knows the locations of where the practice bombs hit. He also recalls seeing practice bombs in the "bomb-bay" which were released early before their intended target. Mr. Borgan says the targets were square and rectangular sheets of wood painted white on stilts in random order built in the middle of pasture land. The targets were later burned and scrap metal has long since been cleared mostly by farmers.

4.4 Air Photo Interpretation and Map Analysis

4.4.1 Interpretation of Aerial Photography

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Photoanalysis and land use interpretation were done using the following listed photography:

<u>Photography</u> <u>Date</u>	<u>Scale</u>	<u>Source</u>	<u>Identifier(s)</u> <u>Frame(s)</u>
18 AUG 1953	1:20,000	ASCS	147 Thru 150; 62 Thru 66; 25 Thru 28; 111 Thru 114
11 AUG 1958	1:20,000	ASCS	23 Thru 27; 62 Thru 65; 112 Thru 115
24 SEP 1965	1:20,000	ASCS	111 Thru 114; 261 Thru 264; 225 Thru 228
14 AUG 1991	1:40,000	USGS	13 Thru 16

The maps cited at paragraph 4.4.2 (below) were used as references for the photography.

Photography listed above covering the Watertown Air-to-Ground Gunnery Range was examined. All photos reviewed show the site in the post WWII era, after the area was declared clear of explosive ordnance. No ordnance and/or range related anomalies were noted.

Terrain at the site is hilly. Due to past glaciation, numerous lakes dot the area, causing an irregular drainage pattern. Land use is mostly agricultural. Population is sparse and limited to small farmsteads. Primary paved roads form an infrastructure supported by unpaved secondary roads and trails.

4.4.2 Map Analysis

The site was analyzed using the following USGS 7.5 minute quadrangle map:

Twomile Lake, S. Dak. (1970)

Review of the above-cited map sheet confirms general descriptions found in paragraph 4.4.1 above. The map was also useful in locating boundaries and identifying features on the photography.

5.0 Real Estate

5.1 Confirmed DoD Ownership

The War Department acquired the site, consisting of 7,312 acres, by fee ownership, 280 acres, and lease, 7032 acres, in 1943 and 1944. Use of the site by the military ended when the land was declared surplus in August 1945 and all leases were cancelled by 30 June 1946.

Research revealed two clearance documents, a December 1946 certificate issued by Headquarters, Army Air Base, Sioux City, covered several ranges, including Ft. Sisseton. It states that a thorough search was made and all duds, unexploded projectiles and bombs were been marked and disposed of. Also, in August 1950, the Army Corps of Engineers issued a Certificate of Clearance (COC) for decontamination of the site stating that the area was given a visual inspection and cleared of all dangerous and/or explosive materials reasonably possible to detect. The land was recommended for any use for which the land is suited.

5.2 Potential DoD Ownership

No information indicating DoD ownership of any related lands other than those mentioned above was uncovered during the archive search.

5.3 Significant Past Ownership

There was no significant past ownership, other than DoD, that would have contributed to OE contamination.

5.4 Present Ownership

The majority of the site is currently in private ownership and used for ranching and agricultural purposes. Approximately 480 acres are owned by the State of South Dakota and preserved as the Fort Sisseton State Park. A complete list of owners is available at CEMRO.

6.0 Site Inspection

The site inspection was conducted on 1 August 1996, by the following personnel of the St. Louis District:

Dennis W. Gilmore	Project Manager
Randy Fraser	Safety Specialist
Fred Miller	Historian

The site survey confirmed the presence of OE debris and related materials within the FUDS.

This former World War II air-to-ground gunnery range is situated in Township 125 North, Range 56 West, Sections 3, 4, 9, 10, 15, and 16, and extending north into Township 126 North, Range 56 West, Sections 21, 22, 27, 28, 33, and 34. The roughly two mile by six mile tract is hilly with numerous sloughs (shallow lakes). Land use is primarily agricultural. The site includes Fort Sisseton State Park.

The location of the former targets was not found in historical documents nor in the analysis of aerial photography. The INPR states that concrete foundations were constructed (observed on site visit) in the eastern half of Sections 9 and 16, Township 126 North, Range 56 West. These were believed to have supported observation towers. The INPR further provided that the majority of practice bomb remnants have been found in Section 9.

A copy of the Second Air Forces typical Air-to-Ground gunnery range layout (located in Appendix E) was obtained from historical records. Transposing this layout onto the site terrain, several other areas are identified as potential target locations. These areas were inspected by the team, and no observations of OE were made. These findings are consistent with historical documents which indicate that the site was not used as an air-to-ground range. However, .50 caliber rounds have been recovered from the site.

The execution of the site inspection was hindered by crops, tall grasses and the abnormally high water levels. The site is, and has been, inundated with exceptionally high water, reportedly for the past four years.

Three target footing were located; the layout of which suggests that the bombing target was located in the area south of Mallard Slough, centered on Sections 9 and 10. Landowners note that this is where they have recovered most of the practice bomb remnants. They further state that any practice bombs recovered in recent years have been retrieved from the bottom of the sloughs. Other items recovered include expended .50 caliber rounds and dummy rounds.

Photographs of the site are located in Appendix I.

7.0 Evaluation of Ordnance Presence

Based on the extensive archive searches performed, the interviews with the owners and/or managers of this DERP-FUDS site, and observations made during the conduct of the site inspection, it is concluded that the probability of OE contamination, which would pose an explosive hazard, is negligible.

As stated in Section 6.0 - Site Inspection, OE was not observed on the site. None of the items observed in possession of the local resident presented an explosive hazard. All areas above the normal water level have been in cultivation, without incident, since the lands were transferred. No items other than practice bombs and expended .50 caliber rounds are known to have been recovered on the site. Any practice bomb remaining in the slough would pose no explosive hazard.

8.0 Technical Data of Ordnance and Explosives

The Watertown Air-to-Ground Gunnery Range was apparently limited to .50 caliber and M38A2 Practice Bombs. Listed below are examples of the types of ammunition most likely to have been used. Data sheets for the listed ammunition are located in Appendix C.

Bomb, Practice, 100 Pound, M38A2

Cartridge, Armor Piercing, Caliber .50 Caliber, M2

9.0 Evaluation of Other Site Information

No other environmental concerns relevant to DoD were discovered during the research or site visit.